Annual Report 2005

NaturalGas
EPA POLLUTION PREVENTER

Production Sector

Company Information

Company Name: Apache Corp.
Gas STAR Contact: Mitch Masterson
Title: EH&S Coordinator
Address: 2000 Post Oak Blvd.
Houston
City, State, Zip Code: Texas, 77056-4400
Telephone: 713-296-6802
Fax:
E-mail: Mitch.Masterson@apachecorp.com

- ☐ BMP 1: Identify and replace high-bleed pneumatic devices
- ☐ BMP 2: Install flash tank separators on glycol dehydrators
- ☒ BMP 3: Partner Reported Opportunities (*Please specify*)

Period covered by report: From: 1/1/05 To: 12/31/05

Signature: MB Date: 3/1/06

* In addition to reporting methane emissions reductions, you are welcome to include other information about your company's participation in Natural Gas STAR in the "Additional Program Accomplishments" section of this form. The Natural Gas STAR Program will use any information entered in this section to recognize the efforts and accomplishments of outstanding partners.

Entered into Access
4/10/06 DH - Entered into ISTAT
QA/QC DF 5/5/06

Production Sector Annual Report

BMP 3: Partner Reported Opportunities (PROs)

(For more details on PROs, visit www.epa.gov/gasstar/pro/index.htm)

Current Year Activities

A. Activity description: Please provide a separate PRO reporting form for each activity reported

Check one of the following:

- [X] Install vapor recovery units (VRUs)
- [ ] Install flares
- [ ] Install electronic safety devices
- [ ] Install instrument air systems
- [ ] Eliminate unnecessary equipment and/or systems
- [ ] Other *(Please specify)*: _____

Please describe how your company implemented this practice/activity:

See attachment

Implemented Sept 1, 2005

B. Level of Implementation *(check one)*: ✓

- [X] Number of units installed: 1 units
- [ ] Frequency of practice: _____ times/year

C. Are these emissions reductions *(check one)*:

- [X] Continuing/ongoing
- [ ] One-time

D. Methane emissions reduction: 55 Mcf/day ✓

Implemented Sept 1, '05 → 6710 Mcf for '05

E. Cost summary: Estimated cost of implementing this practice/activity (including equipment and labor): $ N/A

Please identify the basis for the emissions reduction estimate, using the space provided to show any calculations

- [X] Actual field measurement
- [ ] Calculation using manufacturer specifications/other source
- [ ] Other (*Please specify*)

F. Total value of gas saved: $ 46,970 ✓

Total value of gas saved 6710 Mcf × $7 =

= Methane emissions reduction (in Mcf)
x Gas value (in $/Mcf) [If not known, use default of $3.00/Mcf]

G. To what extent do you expect to implement this practice next year?

Previous Years' Activities

Use the table below to report any past implementation of this PRO, but not previously reported to Natural Gas STAR

Year	Frequency of Practice/Activity or # of Installations	Total Cost of Practice/Activity (incl. equipment and labor) ($)	Estimated Reductions (Mcf/yr)	Value of Gas Saved ($)

BMP 3 Comments/Additional Benefits: *Please describe any additional economic, operational, environmental, or safety benefits achieved by implementing this practice/activity. Use the back of the page for additional space if needed.*

THE GREENHOUSE UPDATE

"Harvesting emissions for profit"

"The Greenhouse Update" will be published periodically to document greenhouse gas emission reduction opportunities acted upon by Apache employees in the Central District. Apache is participating in the EPA's Natural Gas STAR Program, a voluntary effort between EPA and the natural gas industry, which encourages the use of cost-effective technologies and practices to reduce emissions of natural gas. Methane, the primary component of natural gas, is a greenhouse gas with 23 times the global warming potential of carbon dioxide.

Case Study # 1: Dobson 1-20 Well, Elk City District

Background: The Dobson #1-20 well has been on production since July, 2005, and currently produces at a rate of approximately 120 bopd and 4.6 mmcfd. A standard processing set-up was installed consisting of a three phase separator, dehydration system, oil and water storage and associated piping. The separator dumps to the oil tanks at a pressure of approximately 50 psi.

Assessment: This prolific well was identified as a candidate for further assessment after cursory emission calculations indicated that the release of vented hydrocarbons could be significant. Sensitive flow meters were then utilized to accurately measure the amount of gas being emitted from the oil tank vent line. The measured emissions were on the order of 55 mcfpd.

Implementation of Controls: A two phase low pressure separator will be installed on the oil dump side of the high pressure separator and a vapor recovery system (flash gas compressor) consisting of a 15 horsepower, two stage compressor will be installed that will be set at 40 psi suction and 650 psi discharge. The 15 hp engine consumes 4 mcfpd of fuel gas and can be rented for approximately $2000 per month.

Economics: An economic analysis was generated that considered the unit's installation costs, monthly rental costs and offset fuel usage. Recovered gas was assigned a market price of $ 8 per mcf. The project will have a two month payout and then generate incremental net lease level income of $4600 / month.

Emissions Reduction: In addition to the added revenue, approximate greenhouse gas reduction will be on the order of 7260 metric tons per year of CO2 equivalents (CO2E).

All personnel associated with this project should be commended on a job well done. Not only do projects like this reduce the company's emissions, they also add to the bottom line.

For more ideas concerning emissions reduction and economic feasibility, please consult your regional EH&S Coordinator and/or the EPA Gas STAR website at: http://www.epa.gov/gasstar/